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NPIC/TSG/RED-172-70
13 July 1970

MEMORANDUM FOR: Chairman, EXRAND

SUBJECT : Submission of Proposed Additions and Changes to the
EXRAND Objectives

REFERENCE : Proposed National Imagery Exploitation Research and
Development Objectives, COMIREX D-33.1/1, dated
26 April 1968, attachment

1. In accordance with previous instructions, the subject additions and changes to the referenced objectives are submitted herewith. Additional objective No. 14 was provided by the DIA member of EXRAND; the other additions and modifications are proposed on the basis of discussions between the [] and NPIC members of EXRAND.

2. Proposed Changes in Existing Specific Objectives.

(1) High-Volume, Large-Scale Imagery Exploitation

b. Rationale. Change "will produce . . . very small-scale imagery." to "will produce large volumes of relatively large-scale imagery having very high ground resolution."

(4) Exploitation of Imagery in Both Selected Area and Roll Form

a. Objective. Develop systems to produce and utilize Selected Area Duplicates (SAD) and Selected Target Prints (STP) either in composite rolls or separate pieces of cut film (chips).

b. Rationale. Replace "Trends . . . chips and roll film." with "The vastly increased volumes of film programmed for new acquisition systems indicate that some changes in the initial duplication process must be made. Such changes will doubtless limit total reproduction copies for search and evaluation purposes and provide selective copies for surveillance read-out

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which are keyed to areas of responsibility and/or specific targets. These limited reproductions may be in composite rolls or specific cut film (chip) forms."

(11) Film Base Reclamation Silver Recovery and Pollution

Control

a. Objective. After, "standard" add "pollution controlled."

3. Proposed Additional Specific Objectives.

14. Imagery Evaluation

a. Objective. To develop procedures and techniques for systematic evaluation of image quality resulting from operational reconnaissance missions, using both subjective and objective methods, and including dissemination to appropriate collection and exploitation activities.

b. Rationale. Monitoring the performance of active camera systems, particularly when new or recently modified, requires a periodic analysis of operational imagery and subsequent feed-back to system designers. This applies to both reconnaissance satellite and airborne collection systems. Systematic analysis of the resulting imagery can also be used to evaluate the performance of the collection platform as well as the camera system. The evaluation results are also of value to the image interpreter as a measure of the potential information content of a given image. Considerable research must be accomplished to develop objective and subjective techniques which are capable of analyzing the various

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factors affecting image quality. Such techniques must be sensitive to changing conditions throughout a mission. Specialized equipment must also be developed, to support the various image evaluation techniques, such as micro-densitometers, comparators, and special viewing equipment.

15. High-Resolution Color Imagery Exploitation

a. To develop high resolution color (including false color) imagery exploitation standards, techniques, materials and equipment as needed to exploit color acquisition imagery in response to corresponding EEI's. Exploitation will include:

- (1) Establishing intelligence value
- (2) Determining analytical and reporting standards and techniques
- (3) Determining training needs and developing training programs
- (4) Determining human response characteristics
- (5) Developing color film duping materials and equipment
- (6) Developing viewing and mensuration equipment
- (7) Developing color imagery quality evaluation techniques and equipment
- (8) Developing color mass reproduction technology
- (9) Developing electronic data processing technology for color imagery.

b. Rationale. Recent advances in the performance of color acquisition film indicate that color imagery having resolution

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as high as the current black and white imagery will become one of the primary information sources of the imagery derived intelligence system by FY-74. The high level of technology developed for the exploitation of high performance black and white imagery must now be adapted and expanded to color imagery of equivalent performance. The present state-of-the-art in exploitation of color imagery indicates that it is in an equivalent state to that of black and white exploitation techniques more than 15 years ago; consequently, all facets of the color imagery exploitation process are in dire need of technological development. Numerous high-priority, unsolved, intelligence problems may find solutions in the development of advanced multi-spectral imagery systems for which color and false color imagery are fundamental building blocks.

16. Exploitation of Very High Resolution (VHR) Acquisition Materials

a. Objective. To develop imagery exploitation techniques, materials, and equipment required for efficient utilization of very-high resolution acquisition films.

b. Rationale. Recent developments in non-silver halide photographic materials and the improved performance of reconnaissance optical systems indicate that acquisition film records may exceed 400 l/mm low-contrast resolution within two or three years. The possibility that even further increases may occur is also indicated. Analysis of the effects of such resolution increases on current

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exploitation processes and corresponding exploitation systems
development projects are required.



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Chairman, Technical Task Team
EXRAND

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1 ea. - EXRAND Members

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